POSTOPERATIVE INTESTINAL OBSTRUCTION IN INFANTS AND CHILDREN*

WILFRED KARK, F.R.C.S., *University of the Witwatersrand, Johannesburg*

An analysis of experience with intestinal obstruction following abdominal operations in infants and children has provided some unexpected results in regard to the causes of the obstruction; and, although the condition is not common and the experience reported here is limited, it appears to be worthy of record.

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The material studied consists of 20 cases which have arisen in the course of the past 9 years. The 20 cases all presented a mechanical intestinal obstruction; they had all had previous abdominal surgery; and they were all submitted to further surgical treatment — thus a definite diagnosis could be made. These were not the only instances of postoperative obstruction that occurred during this period; there were also examples of paralytic ileus as well as cases of mechanical ileus which were treated conserva-

tively; these cases are listed in Table I to provide a perspective of their relative incidence. The absolute incidence of the conditions cannot be given with any degree of statistical accuracy, since the material was derived from a number of different sources and the treatment was carried out in several different hospitals.

TABLE I. RELATIVE INCIDENCE OF POSTOPERATIVE INTESTINAL OBSTRUCTION

Obstruction	*How treated*	*No. of cases*
Paralytic ileus:		
with peritonitis	—	14
non-infective	—	4
Mechanical ileus	Conservatively	12
Mechanical ileus	By operation	20

It is highly probable that the 12 cases of mechanical ileus, which were treated conservatively, were caused by postoperative adhesions, but they are omitted from this study because the diagnosis was not made with precision and certainty. This paper is confined to a report on the 20 cases of mechanical ileus treated by operation and is concerned with the proved diagnosis of the causes of the postoperative mechanical obstruction.

The age groups into which these cases fall (i.e. at the time of their postoperative intestinal obstruction) are as follows: neonatal, 4 cases; under 2 years, 4 cases; and over 2 years, 12 cases.

NEONATAL

Case 1

The original operation was for malrotation of the gut performed on the second day after birth; postoperatively the obstruction persisted, and re-exploration on the sixth day revealed the presence of a band constricting the duodenum.

Case 2

The original operation was described as having been done for a volvulus of a midgut loop on the third day of life; evidence of obstruction recurred on the 14th day, and at re-operation 3 days later, a recurrent volvulus of the whole midgut loop was discovered.

Case 3

The initial operation was for a congenital abnormality of the common bile duct; 3 weeks later, multiple adhesions were freed at the second laparotomy.

Case 4

The original condition was a tracheo-oesophageal fistula with a blind, short oesophagus. Repair and reconstitution was effected *via* a combined thoracotomy and laparotomy; postoperatively, intestinal obstruction became manifest, and on the 5th day a further laparotomy showed malrotation of the gut with obstruction of the third part of the duodenum.

It is noteworthy that the postoperative obstruction was due to adhesions in only 1 case out of the 4 in this group.

UNDER 2 YEARS

Case 1

At the first operation, done at the age of 14 months, it was reported that an acutely inflamed appendix was removed. A number of episodes of abdominal pain followed over the succeeding months, and at the age of 19 months an acute complete obstruction presented; on the 3rd day of this obstruction, an 8-inch-long segment of reduplication of small bowel was resected.

Case 2

This was of a similar nature. About 2½ months after appendicectomy, re-exploration for intestinal obstruction revealed a mesenteric cyst at a fairly high level of the jejunum.

Case 3

This infant of 5 months of age was referred 4 days after an operation at which an ileo-caecal intussusception was reduced. Persistent obstruction called for a second operation, at which a second intussusception, some 4 feet proximal to the ileo-caecal junction and caused by a Meckel's diverticulum, was found.

Case 4

A persistent vitelline duct, which had discharged at the umbilicus since birth, was dissected out and removed at the age of 5 months; at this operation, the ileal end of the fistula was carefully examined, but no other abnormality was noted at the time.

Some 5 weeks later, after a clinical picture of intestinal obstruction lasting for about 12 hours, re-operation showed distension of the small bowel proximal to the level of the previous site of closure of the ileum; distal to this site, the ileum was collapsed. The level at which distended bowel met collapsed bowel was abrupt, but there was no evidence of an organic obstruction at the site. A side-to-side anastomosis was done, short-circuiting the affected loop; this led to relief of the condition.

OVER 2 YEARS

Case 1

This case was very similar to case 4 of the 'under-2-years' group. A girl, aged 2 years and 8 months, was reported to have had a resection of a Meckel's diverticulum 21 days before the onset of a bout of intestinal obstruction; this obstruction appeared to relent, and subsequent X-ray studies showed a partial hold-up in the lower ileum; 2 further episodes of obstruction occurred and then, 6 weeks after the first operation, another, and apparently complete, obstruction supervened.

At the second operation, a condition similar to that described in case 4 in the 'under-2-years' group was found; there was marked distension, of a spherical type, at the site of the removal of the diverticulum; the distended portion of bowel was about the size and shape of a tennis-ball, sharply limited at its distal end and fading somewhat into moderately distended bowel proximally. About 8 inches of bowel, including the distended portion, was removed and continuity was re-established by end-to-end anastomosis. The resected portion of bowel did not show any mechanical obstructing factor, nor was the histological examination suggestive of any form of nerve-plexus abnormality.

Cases 2 and 3

There were 2 patients, one aged 7 and another aged 9 years, in whom an appendicectomy had been done, respectively, 2 weeks and 5 weeks previously. The obstructions in these 2 cases were both due to intraluminal plugs. In one, an undigested bolus of fruit, and in the other, a firmly-packed plug of round worms, was found.

Cases 4-8

Five patients, with previous appendicectomies, presented with subsequent intestinal obstruction which was found to be due to:

(*a*) an intussusception in the lower ileum;
(*b*) a jejuno-jejunal intussusception due to an adenoma;
(*c*) an adherent Meckel's diverticulum causing acute kinking of the ileum;
(*d*) a volvulus of the small bowel caused by a Meckel's diverticulum; and
(*e*) a large mesenteric cyst causing compression of the ileum.

Apart from case (*e*), the mesenteric cyst, the other 4 postoperative obstructions presented within 6 weeks of the initial operation; that due to the mesenteric cyst occurred 11 weeks after the appendicectomy.

Case 9

A boy of 7 years had a repair of an hiatus hernia 8 days before the onset of an intestinal obstruction. The original operation had involved a combined thoraco-abdominal explora-

tion. Re-operation showed the cause of the obstruction to be malrotation of the gut, with loops of bowel lying under the right cupola of the diaphragm, above the right lobe of the liver.

Cases 10 - 12

In 2 of these, a previous appendicectomy had been done, respectively, 6 months and 3 years before the obstruction. In the third case, a Meckel's diverticulum had been operated upon 18 months before the obstruction. They all proved to be due to adhesions affecting mainly the lower loops of the ileum.

DISCUSSION

In 3 cases, the last 3 listed above, the obstruction may be said to have appeared late in the postoperative period. They were cases where firm, well-established adhesions caused the obstruction. All the other cases, in all 3 age groups, arose at a relatively early postoperative stage. Only 1, in the neonatal group, was caused by adhesions; in the remainder, the findings were rather unexpected in that they were due to pathological conditions other than adhesions. In 3, possibly 4, cases the condition was either a part of, or a recurrence of, the original condition for which the first operation had been done, but in no fewer than 12 cases the obstructing factor was unrelated to the original condition and suggested either a second pathology or, in fact, a primary pathology which was mis-diagnosed and overlooked at the time of the initial laparotomy.

It is usually held that early postoperative intestinal obstruction in infants and children is most commonly due to early adhesions, of a soft and plastic variety, not requiring surgical intervention, but calling for conservative management. This series of cases, admittedly small, suggests that a modified attitude is required; a significant number of such early postoperative obstructions is due to distinct and surgically amenable lesions. It may be argued that the initial surgery was inadequate or careless in many, or most, of the cases; however, it is to be noted that, for the most part, the initial treatment was performed or supervised by experienced and competent surgeons.

SUMMARY

1. A series of 20 cases of intestinal obstruction following abdominal operations in infants and young children is presented.

2. In 16 of these cases the obstruction was due to conditions other than postoperative adhesions; 17 of the cases arose in the early postoperative period.

3. In 12 of the cases, the condition causing the obstruction was quite unrelated to that for which the original abdominal operation was performed.

4. It is suggested that a modified attitude to postoperative intestinal obstruction is needed, since in a significant number of cases the early postoperative obstruction is due to a distinct and surgically treatable condition.